Montana 12ers

10-12 August 2023

Here are some measurables and methods of my solo unsupported summit of the 27 peaks in Montana whose elevation is at least 12,000 feet. This is written for anyone seeking to implement a similar effort.[1] [2]

Timeframes. The outing lasted 66 hours 31 minutes 21 seconds.

- 02:45 Embarked from West Rosebud Trailhead.
  06:04 Summited Pyramid.
  07:31 Summited Wood.
  09:32 Summited Hague.
  15:15 Summited Peel.
  16:08 Summited Tempest.
  17:48 Summited Granite.
  18:41 Summited North Granite.
  20:13 Summited Mystic.
  22:13 Summited Villard.
  23:36 Summited Glacier.
  01:55 Summited Villard Spire.
  06:24 Summited Cairn.
  12:15 Summited Snowbank.
  13:24 Summited Salo.
  14:40 Summited Castle Rock NorthEast.
  15:44 Summited Castle Rock.
  16:34 Summited Rainbow.
  18:22 Summited Castle.
  20:28 Summited Sky Pilot.
  03:38 Summited Sundance.
  05:46 Summited Bowback.
  09:36 Summited Silver Run.
  11:27 Summited Whitetail.
  15:17 Summited Beartooth.
  16:58 Summited Forget-Me-Not.
  17:32 Summited Spirit.
  19:42 Summited Reargard.
  21:17 Disembarked at Rock Creek Trailhead.
- Traveled about 97 miles. [3] [4]
- "Slept" 2 times, for a total of about 287 minutes.
  (1) Sky Top Lakes 3:02-5:16am;
  (2) Base of Sundance 11:57pm-2:30am.
- Aside from "sleeping", stopped traveling about 10 times for more than 1 minute, for a total of about 75 minutes.

Personal & Environmental variables.

- Some personal measurements: 41 years and 4 months of age; 66.1kg in weight; 1.77m high; 1.80m wide (wing-span).
- (Civil) Twilight began at 5:39am; Sunrise was 6:10am; Sunset was 8:35pm; (Civil) Twilight ended at 9:06pm.
- Skies were clear but for
  - 2:00-4:30pm of the third day, which witnessed about 60% cumulous cloud cover, some virga and scents of rain;

[1] Contact me directly if you'd like more information of any sort.

[2] For anyone wanting to know what I felt through this excursion, consider listening to "In C Mali", written by Terry Riley and performed by Africa Express.

[3] Poor route-planning resulted in stomping through marsh for $\sim \frac{1}{2}$mile rounding the inlet of Mystic Lake.

[4] Poor memorization resulted in a wrong turn at Gallery Lake resulted in a $\sim \frac{1}{2}$mile detour, which was corrected at Red Rock Lake.

  - 4:30-9:15pm of the third day, which witnessed about 100% cirus cloud cover.
- Winds were stably about $13\frac{\text{miles}}{\text{hour}}$ along crests through the middays, and as strong as $17\frac{\text{miles}}{\text{hour}}$ near sunrises and sunsets. In the first night, winds were near $0\frac{\text{miles}}{\text{hour}}$; in the second night, winds were near $9\frac{\text{miles}}{\text{hour}}$.
- Temperatures at 10,000 feet ranged
  - while light: 35-55F the first day; 40-58F the second day; 42-65F the third day;
  - while dark: 30-38F the first night; 38-42F the second night.
- Due to a 3-day storm-system that concluded 30 minutes before I embarked, a $\sim$1 centimeter dusting of snow covered the talus above 11,000 feet for the first $\frac{3}{4}$day.
- Travel on frozen water was necessary in several stretches:
  - between the base of Glacier Peak and the base of Villard Spire;
  - intermittent short stretches between Sky Top Lakes and the base of Snowbank;
  - between Rainbow and Castle;
  - traverse to the base of Sky Pilot;
  - between Omega Lake and the base of Sundance;
  - between Forget-Me-Not and Spirit.
- I encountered a total of two parties in-route.
  - Around 1pm of the first day, I came across a lone mountain guide guarding her group's tents from entitled mountain goats on the Froze-to-Death plateau. The following morning, her group would attempt a summit of Granite Peak.
  - Around 4:30pm of the first day, I came across a party of 3 – one guide and two clients – descending the East ridge of Granite Peak.

Skills & **practices** for safely completing this route as $<$ 3-day effort.

- Adequately proficient climbing skills for a handful of exposed high-Class 4 / low-Class 5 sections on unstable rock.
- Willingness to, and experience with, travel through terrain with unavoidable touchy rock-slide hazard for prolonged stretches.
- Competence assessing risk and selecting travel-path&mode across steep snow/ice and steep angle-of-repose talus.
- Efficient mistake-less boulder-hopping.
- Detailed familiarity and/or actionable memory of the entire route.[5]
- Exact plan for dark-time travel assuming zero visibility, such as using memory, compass, stars, maps, GPS track, handrails, etcetera.
- Ability to toggle into, and maintain, some sort of a Flow-State.
- Experience managing nausea, such as by keeping spirits up and by modifying breathing, effort, hydration, and strategically consuming elements of nutrition.
- Capacity and confidence to make clear-minded decisions while sleep-deprived, and to meet boundaries of will and commitment in remote wilderness (without any support), while remaining cognizant and trusting risk-assessment & decision-making.

Technical or high-exposure. Here, listed in my execution's chronological order, are the sections that, for me, required meticulous attention to movement and rock stability.

[5]This is in place of making any route-finding decisions, or interpreting a map or GPS device in real-time.

- The out-and-back section between the South summit of Wood and the (North) summit of Wood involves some 'likely-injury' exposed high-Class 3 travel.
- The out-and-back section between the shoulder of Tempest and the near-summit of Peel involves some high-Class 3 travel along crumbling rock, some that's exposed to a steep permanent snowfield, as well as some 'likely-injury' exposed high-Class 4 travel on rock that may be wet or iced.
- The final pitches up the East ridge of Granite involve a Class 5 short traverse to a Class 5 chimney followed by a low-Class 5 friction, the latter which may be impassable if wet. The short traverse to this chimney is, in my opinion, **the second most technical spot of the entire route**. In my opinion, this is not among the riskiest sections of the route, given how solid the rock is here.
- Descending the NorthWest ridge of Granite toward North Granite involves 'certain-death' exposed high-Class 4 / low-Class 5 travel on rotten rock that's often wet and iced. In my opinion, **this is among the four riskiest sections**.
- The out-and-back between the base of Villard Spire and its tip involved mildly exposed high-Class 3 / Class 4 travel on rock that may be wet or iced. This exposure escalates to 'serious injury-likely' about 2 times.
- The out-and-back section at the shoulder of Castle Rock, toward Castle Rock North-East, involves a couple mildly exposed high-Class 4 moves.
- The out-and-back section near Castle Rock NorthEast involves a couple 'injury-likely' exposed high-Class 4 moves.
- Ascent of the NorthWest face of Rainbow involves 'injury-likely' exposure up a loose couloir that's often wet and iced, followed by a 'certain death' exposed traverse and hoist atop a human-sided free boulder. In my opinion, **this is among the four riskiest sections**.
- Descending the South couloir of Rainbow onto a glacier involves travel along steep snow/ice and assessing if/how to use a bergschrund, presenting a 'severe injury' risk. In my opinion, **this is among the four riskiest sections**.
- Descending a prominence between Sundance and Bowback involves a couple 'certain death' exposed high-Class 4 / low-Class 5 moves. The rock here is reasonably solid. I believe this section could be avoided by dropping down a South-facing loose couloir and traversing.
- Ascending out of a notch toward Bowback involves a 'injury likely' exposed high-Class 4 move, then two 'certain death' exposed low-Class 5 moves, the last of which is a hoist onto a human-sized free boulder. In my opinion, **this is among the four riskiest sections**.
- Descending the South ridge of Whitetail presents mild rock-slide hazard. While the boulders were large, they had a propensity for being disturbed by human force.
- Ascending the WestNorthWest gully of Beartooth presented extreme rock-slide hazard. The human-sized boulders hang at the angle-of-repose, and were in constant movement as I traveled up and across this field.
- The NorthNorthEast ridge of Avalanche involves 'injury possible' exposure for a short series of ledges riddled with rotten sandy rock.
- The South ridge of Spirit involves 'injury possible' exposure descending solid rock slabs.

- Summiting Reargard involves a ∼Class 5.7. In my opinion, **this is the most technical spot of the entire route**. In my opinion, this is not among the riskiest sections of the route, given the rock's stability and lack of exposure.

About approach.

- Across this and the previous seasons, I made four trips to the Beartooths with purpose of scouting this route. [6] After these scouting excursions, I identified my intended route and traveled most of it. From close-by, I visually inspected the parts I did not travel, all of which were no more technical than Class 2.
- I memorized the entire route, including as much minutiae as I figured relevant. Most of this memorization was afforded by lived experience scouting.[7]
- I mildly trained this season similar to how I would for a 24-hour 100-mile trail race. In addition to generally gaining fitness and practicing will, I focused on scrambling through long days in other mountain ranges.
- Keeping awareness on breathing – deep slow breathes – was helpful for both managing nausea and supporting high-effort ascents (without being overcome by fatigue).
- My real-time attention was focused on attaining and holding a Flow-State. In a sense, most of my training and practice leading up to this excursion was for enabling prolonged periods of Flow-State.
- I used the watch's timer for marking consumption of calories and salt, and for assessing minor injuries. I find this practice essential for staying ahead of fueling, and also for outsourcing decisions, so as to relieve my mind of mounting tasks and to dispense seeds and blooms of irrational stress.
- As a rule, I filled a water flask any time an opportunity presented and it was less than half-full.
- As a rule, I moved with meticulous care across steep talus, always with three points of contact and no dynamic movements.
- I was too cold to effectively sleep. The periods of "sleep" served more as periods of horizontal rest.
- There are multitudes of practices and tricks that avert doubt, dismiss irrational stress, and compartmentalize discomfort and nausea. I have found it productive to believe much of that is a presentation of fear, and to identify the source of such fears, or at least convince myself I've identified such. Often, such fears are irrational (eg, nobody will love me), outdated in the face of technological and societal support (eg, I will starve, or freeze), or exagerated (eg, my blistered toe will result in my death). While a few such fears can be instructive, I believe most can be directly managed or outright dismissed.[8]

[6] These scouting excursions were outright fabulous. For many of them, I solved back-end logistics using using hitch-hiking, which I am fortunate enough to safely rely on.

[7] Most of my scouting excursions witnessed more frozen water than this execution. The more technical sections, in particular, were considerably more straight-forward in this execution than in the scouting. This disparity afforded welcome sparks of delight.

[8] For example, as a rule, once a fear is identified, filter it through the question "will it kill me?"; as a rule, resolve any immediate discomforts; as a rule, hold proximate in mind the technological and societal support I carry; as a rule, create and trust a conceptual model of the near-future based on acute observations; as a

- Generally, my preparation for this excursion was enabled by love and support from a few people in my community, notably Ana, Loren, Sam. None of these people particularly cared about the competitive or out-facing aspect of my intentions (ie, setting and publicly posting an FKT), an orientation that, I believe, is helpful for such a prolonged hard effort.

Gear.[9]

	Item	Use	Remarks, such as quantity carried
Primary layer	Shoes	entire	trail-running, w/ laces, w/o rock plate
	Socks	entire	ankle-high
	Shorts	entire	5" seam, tie-top, 5 pockets (4 open, 1 zipper)
	Shirt	entire	long sleeve, w/ hood
	Sweat band	entire	on wrist
	Watch	entire	w/o band
	Visor	50%	
	Pack	entire	15 Liter
	Waist belt	entire	4 pouches, fastens poles
	Helmet	50%	ultra-light
Secondary layer	Jacket	25%	thin, baffled
	Shell	75%	waterproof
	Glove-mittens	60%	inner glove & removable outer mitten
	Tights	35%	compression
Essential equipment	Water storage	entire	2 × 0.5 liter soft-flask w/ filter nozzle
	Emergency bivvy	2 times	velcro-secured taco-able
	Headlamp	40%	up to 750 lumen
	GPS device	entire	5-minute satellite-tracking pings sent once per 30 minutes, 2-way text-messaging, emergency rescue button
	Smart-phone	entire	set GPS & time stamp on photo app
Auxiliary equipment	Poles	20%	collapsable, hand-straps, tiny baskets
	Ax	3 times	ultra-light
	Chap stick	6 times	spf 15
	Straw	3 times	silicon, 4 inches
	Secondary headlamp	∅	tiny
	2 x Buff	50%	-
	Battery & cables	3 times	10000mAh & two 6-inch each
	Duct tape	0	wrapped on pole
	Compass	entire	dime-sized
	Lighter	0	half-sized
	Toilet paper	2 times	tightly-rolled
	Sacks	entire	2, for organizing stuff
	Plastic bags	1	3 x doggie bags
	Rubber band	-	broccoli
	ID, Cash, Debit card	-	Driver's License, $110 ($50+6x$20), -
Consumables	Gels	7 gels = 3,750 calories	24 gels @ 250 cal/gel, mostly coconut oil & rice syrup
	Bars	12.5 bars = 5,036 calories	16 gels @ 400cal/bar, mostly nut fat, some soy protein
	Acetaminophen	0	12 x 200mg pills
	Caffeine	3 pills	6 x 200mg pills
	Nausea relief	0	4 x Zofran
	Electrolytes	6 pills	25 x 200mg Sodium pills (NaCl + trace K + Mg)

How **gear was worn**.

Body: – Visor, long-sleeve shirt often w/ hood up, shorts, socks, shoes;

rule, intimately remember how there's nothing else I would rather be doing; as a rule, remind myself how soon it will all be over, and I will wish I was right back out again; as a rule, sensitively identify veins of joy, and mine them until they are exhausted; etcetera

[9]That I'm able to assess, all gear, including glue, is vegan.

- Sweat band on one wrist: one with compass integrated;
- Shell tied around waist if not worn;
- Helmet on head when not in pack.

Shorts:
- In 3 open pockets were 2,400 calories;
- In 1 open pockets was GPS tracker;
- Zipper pocket carried straw and toilet paper in doggie bags cinched by rubber band.

Waist belt:
- In 2 waist belt pocket were 2,100 calories;
- In 1 waist belt pocket was the smart-phone;
- In 1 waist belt pocket was battery & electrical chords;
- Fastened to the outside of the waist belt were 2 collapsable trekking poles each with some wraps of duct-tape at its center-o-mass.

Pack:
- Chest pouches:
  - Water flasks, 800 calories, pills, buff, watch, trash.
- Back compartment:
  - In a small sack: Jacket, glove-mittens, tights, buffs;
  - In a small sack: extra headlamp, lighter, tights;
  - Loose: Bivvy, calories, helmet (when not worn);
- Fastened to outside: ax.

About gear.

- The total weight of my gear (not counting water) was 6kg, which was slightly less than 10% of my body's weight. This was measured as the difference between standing on a scale with all gear (shoes, pack, calories, etc) and my naked body on a scale. To enable dynamic joggling and boulder-hopping, I wore as much as reasonable of this weight *not* in my pack. Most of the bars were removed from their wrapper, so as to not deal with trash.
- The gloves protected my hands from tattering through all the scrambling.
- One buff was used to retain heat around my head and ears; another buff was used to retain heat around my neck.
- The battery & cables were used for recharging the smart-phone, headlamp, and GPS tracker.
- The ax was used 3 times for crossing frozen water. Scouting confirmed the necessity of an ax, especially for the route I followed from Rainbow and Castle. Though one could certainly traverse the route I followed without an ax, it proved vital for obliviating unnecessary stress.
- The doggie bags were for collecting used toilet paper, and covering feet or hands if wet or cold. The rubber band cinched the doggie bags over the unused toilet paper. The duct tape was for blisters or tears. The straw was for drinking snowmelt. Shoe laces can be handy for jury-rigging. (I think the function of the rest of the gear is self-evident.)
- With the presently available materials and technologies, I believe this gear (not counting food) was as trim as safely viable.

Improvement. Were I to attempt a faster version of this effort, I would focus on these changes to my approach.

- To the extent that's possible, arrange a 20-day window for attempting this objective when the weather is ideal. I didn't allow for much flexibility in my timing, so

I embarked immediately after significant precipitation into soaking wet vegetated forest then talus slick with a dusting of snow. Also, the freezing temperatures in the first night resulted in gymnastic trouble-shooting to find a passable route across ice (between the base of Glacier and the base of Villard Spire).

  - In the present climate, the window for traveling this route with minimal gear is limited: before mid-July it would be unlikely for snow to be adequately melted, and unfrozen at night, to travel without crampons or preoccupation with self-arrest contingency; after late-August it would be a gamble to expect the high-country to be snow-free and to expect sufficiently warm dark-time to carry minimal gear. [10] [11]

- Bring an extra pair of socks, for sleeping. I believe my trouble sleeping was largely due to my cold feet.
- Carry considerably fewer calories. I carried about 12,400 calories, and consumed about 8,778 calories: so I carried about 30% more calories than I consumed, which is a considerable portion of the total weight of my gear. On average, my calorie consumption rate was $132\frac{\text{calories}}{\text{hour}}$. Based on training, I estimated that $125\frac{\text{calories}}{\text{hour}}$ would suffice for this effort – I increased my calorie consumption rate as I figured I was carrying more than I would require.[12]
- Undergo more high-intensity training. I believe I could have ascended up to 5% faster, and traversed flat terrain up to 3% faster, were I better trained (comparably with previous seasons).
- Experiment prior to the effort for how to settle into "sleep" more promptly; resume travel if unable to effectively sleep. Consider sleeping while it's warm, in the light-times.
- Scout and follow a more direct route up Sky Pilot.
- Elect a different route between Sky Top Lakes and Fossil Lake. The route I scouted was not the one I followed, which was a mistake.
- Scout the entire route, without exception. The few stretches I did not scout presented small route-finding decisions that generated inefficient travel and averted Flow-State.
- Embark around Midnight. It could be strategic to summit Cairn before the first "sleep", to then embark along the long stretch toward Snowbank right after the first "sleep".

[10] I considered an early-Summer execution of this route, when snow would dominate the high-country thereby potentially lending to faster travel. But in an early scouting trip, I discovered that the nature of the snow tends to be iso-thermal and punchy, especially over boulder-fields, compared to early-Summer snow of the Sierras or Pacific NorthWest.

[11] I also considered traversing this route on skis circa June. I dismissed that idea, rationalized that that would require much more gear (for both travel and sleeping). Nevertheless, I think undergoing this route on skis, as soon as avalanche hazard is stable and low, could lend to both a rich experience and potentially a fast execution. In my opinion, attempting this route on skis would require scouting the entire route on skis, likely involving the season prior, and assessing the viability of the various technical sections, while noting the vast variation in how snow accumulates and evolves season-by-season.

[12] I estimate that I can exhale as much as 2.2kg of carbon per day during such an effort.